retention forces. Davies teaches that a number of printed circuit cards are mounted side-by-side in a card rack R. The printed circuit cards are stacked in parallel, with each printed circuit card engaged between an upper and lower channel (ch). Each lower channel (ch-1, ch-2) has a spaced pair of guides or walls (g1, g1', g2, g2') joined by a base (B1, B2). Each printed circuit board has a circuit board (Bd) and an enlarged head (or handle means h) at the other end. The head h will span the channel slot when fully inserted in the slot, such that it will block egress of coolant air from within rack R. Usually, unless all the slots in rack R are filled with cards (fully thrust in position), the coolant air will escape. In this manner, Davies teaches an air seal defined as a replica of enlarged head h along with associated attachment means for gripping the guides of both channels. Thus, the air seal in Davies is created between each printed circuit card and each channel or guide. For example, seal S-1 includes head h having tongue portions (T-1, T-1'), where the tongue portions are thrust along the upper and lower channels to frictionally engage the sides (guides) of those channels. Abstract and col. 1, line 11 to col. 3 line 68.

However, Davies fails to teach, advise, or suggest an integrated modular avionics (IMA) cabinet having "a plurality of printed circuit board (PCB) modules" and "a chassis having a front, wherein said front of said chassis is configured with slots... and wherein said plurality of printed circuit board modules creates a seal with said chassis" as recited in claim 1 (and claim 13, which depends from claim 1). Instead, Davies teaches one rack R containing a number of individual printed circuit boards, and not "a plurality of printed circuit board (PCB) modules" as recited in claims 1 and 13. Further, Davies teaches an air seal formed with each channel, and not "a seal with said chassis" as recited in claims 1 and 13.

Accordingly, Applicant respectfully submits that each and every element of the claims are not disclosed by Davies, and therefore not anticipated by Davies. Therefore, Applicant respectfully requests the withdrawal of the rejection of claims 1 and 13 over Davies.

## 35 U.S.C. § 103 REJECTIONS

Applicant respectfully believes that the § 103 rejections contained within the Office Action are now moot, since they apply to claims that depend from allowable independent claims, and are therefore patentable a fortiori. Nevertheless, Applicant further distinguishes the references as follows:

**Claims 2-7, 9-11, and 14-20**

The Examiner rejected claims 2-7, 9-11, and 14-20 under 35 U.S.C. § 103(a) as being unpatentable over Davies in view of Craker, U.S. Patent No. 4, 716, 497, issued December 29, 1987 ("Craker"). Applicant respectfully traverses this rejection.

Craker discloses a printed circuit board module 10 having a first printed circuit board 12, a frame 14 parallel to the printed circuit board 12, and a front faceplate panel 22. The frame 14 consists of a central connecting member 16 and two legs 18 and 20 to form a C-shaped frame. The panel 22 of the module is fastened to the ends of the frame legs 18 and 20 and the first printed circuit board 12.

Davies fails to teach, advise, or suggest a printed circuit board module having a connector assembly as recited in claim 6. Rather, Davies discloses a back plane BP and a back plane connector B-cc for firmly securing a printed circuit card to the back end of the rack. Col. 1, lines 10-64. However, Davies fails to teach, advise, or suggest first and second circuit boards, where "said second circuit board is disposed adjacent said first circuit board" as recited in claim 6. Further, although Davies discloses a back panel connector B-cc, Davies fails to teach, advise, or suggest "a plurality of connectors for connecting wire harnesses" as recited in claim 7 (and claims 9-11 which variously depend from claim 7).

Still further, the Office argues that it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Davies and provide a module having more than one circuit board (In re Japikse 86 USPQ 70 (rearranging parts of an invention involves only routine skill in the art)). However, as discussed above, Davies fails to teach, advise, or suggest "a plurality of printed circuit board modules" and first and second printed circuit boards, so that a mere rearrangement of existing parts in Davies fails to teach, advise, or suggest the missing claimed elements. Thus, claims 6, 7, and 9-11 would not have been obvious over Davies.

In addition, Davies fails to teach, advise, or suggest where "said top panel and said bottom panel are configured with a plurality of ventilation holes for cooling said PCB modules" as recited in claim 16 (and claim 17 which depends from claim 16). Further, Davies fails to teach, advise, or suggest where "said ventilation holes are sized to be resistant to electromagnetic interference (EMI) and to radio frequency interference (RFI)" as recited in claim 17. Instead, Davies discloses an upper input-plenum means (P1, P2, P3) for receiving input coolant air (AIR IN) and urging the air down through a set of printed circuit cards to finally exit

the rack and the machine (AIR OUT). In this manner, the Davies reference recognizes that heat dissipation from such a closely-packed array of boards can be a problem without supplemental cooling means (e.g., P1, P2, P3). Figure 1 and col. 1, line 15 to col. 2, line 7. However, no where does Davies identify or discuss ventilation holes "sized to be resistant to electromagnetic interference (EMI) and to radio frequency interference (RFI)" as recited in claim 17. Indeed, the problem is neither recognized nor addressed. Furthermore, Davies fails to teach, advise, or suggest where "said ventilation holes are less than about 0.09 inches in diameter" as recited in claim 18. Thus, Davies fails to teach, advise, or suggest the missing claimed elements, so that claims 16-18 would not have been obvious over Davies.

Also, Davies fails to teach, advise, or suggest "a plurality of guide rails for guiding said PCB modules" as recited in claims 19 and 20. Davies teaches lower channels ch-1 and ch-2, which have a spaced pair of guides (g1, g1', g2, g2') for inserting the printed circuit board and not a PCB module. Indeed, as discussed above, Davies fails to teach, advise, or suggest "a plurality of printed circuit board modules" as recited in claim 1 (from which claims 19 and 20 variously depend). Accordingly, although Davies teaches a spaced pair of guides (g1, g1', g2, g2') for inserting the printed circuit board, Davies fails to teach, advise, or suggest "a plurality of guide rails for guiding said PCB modules" as recited in claims 19 and 20.

Additionally, Davies in view of Craker fails to teach, advise, or suggest where "said first screw is configured as a jack screw" as recited in claim 3 or where "said first and second screws are configured to clutch when said screws are tightened to apply a predetermined amount of force between said face plate of the PCB module and said chassis" as recited in claim 4. Although Craker teaches a mounting bolt 60 to attach front face plate 22 to a cabinet, it does not teach that the mounting bolt is a jack screw. While the bolt 60 holds the face plate 22 to the electronics cabinet, it also functions as an electrical connection providing power to digital displays on the face plate. As shown in figure 4, the mounting bolt passes through a compression spring 76 and ground strap 68 to provide an "electrical connection" "to both the printed circuit board and the frame". Col. 4, lines 56-59. Craker also teaches that the mounting bolt "is fastened to the printed circuit board enclosure to hold the module in the enclosure". Col. 4, lines 55, 56. In other words, the mounting bolt is pulling the module to the chassis and providing an electrical connection. In contrast, a "jack screw" is a mechanical device, where a screw applies a certain amount of force to lift or push a load. Accordingly, Craker does not teach

that the mounting bolt is a jack screw or that any amount of force is applied by the screw to clutch or hold the module to the chassis. As such, Davies in view of Craker fail to teach, advise, or suggest a first screw "configured as a jack screw" as recited in claim 3, first and second screws "configured to clutch when said screws are tightened to apply a predetermined amount of force between said face plate of the PCB module and said chassis" as recited in claim 4, or where a "predetermined amount of force applies a load of about 70 pounds per screw as recited in claim 5. Therefore, claims 3, 4, and 5 would not have been obvious to a person of ordinary skill in the art, so that claims 3, 4, and 5 are patentable over Davies in view of Craker.

Further, as discussed above, Davies fails to teach, advise, or suggest one or more of the missing claimed elements of claims 1 and 13 (from which claims 2-7, 9-11, and 14-20 variously depend). In this manner, regardless, the combination of Davies in view of Craker fails to teach, advise, or suggest the missing claimed elements. Furthermore, Applicant submits that the cited art of record contains no teaching, suggestion, or motivation to combine the references as proposed by the Office. See *ACS Hosp. Systems, Inc. v. Montefiore Hosp.*, 732 F.2d 1572, 1577 (Fed. Cir. 1984) (teachings of the prior art can be combined to show obviousness only if there is some suggestion or teaching to do so). Accordingly, the Office is impermissibly using hindsight reasoning in an attempt to recreate the claimed invention with Applicant's disclosure as the basis.

Thus, without using impermissible hindsight reasoning, it would not have been obvious to one of ordinary skill in the art at the time of the invention to modify Davies and/or Craker to include the missing claimed elements. Regardless, Davies in view of Craker fails to teach, advise, or suggest the missing claimed elements. Therefore, claims 2-7, 9-11, and 14-20 are patentable over Davies in view of Craker.

**Claims 12 and 21**

The Examiner rejected claims 12 and 21 under 35 U.S.C. § 103(a) as being unpatentable over Davies in view of Craker as applied to the claims above, and further in view of McKenzie, U.S. Patent No. 4,002,386, issued January 11, 1977 ("McKenzie"). Applicant respectfully traverses this rejection.

The McKenzie reference discloses a handle, which locks in place to prevent it from pinching fingers against the printed circuit boards since there is no face plate covering the PCB.

As part of the locking mechanism, a plurality of pulling pins are disclosed that interact with slots in the handle to keep it in a locked position. However, Davies in view of Craker and in further view of McKenzie fails to teach, advise, or suggest a face plate having "a slot formed therein", "a flexible handle member having substantially the same dimensions as said slot", where the flexible handle member is "configured to move between a retracted position and a use position", and where the flexible handle member lies within the "slot in said retracted position and said flexible handle member extends out from said slot in said use position" as recited in claim 12. Furthermore, Davies in view of Craker and in further view of McKenzie fails to teach, advise, or suggest a retainer member configured to attach the first end of the flexible handle member to the first end of the slot such that the flexible handle member is configured to move between a retracted position and a use position, where the first end of the flexible handle member does not move when the flexible handle member moves between the retracted position and the use position as recited in new claim 21.

Upon careful examination of the cited figures and the accompanying text at McKenzie, col. 2, lines 39-47, it is apparent that the handle is not slideably attached, but rather is attached to pins mounted in the printed circuit board. Slots in the handle move the handle over a pin to a keyhole 50/51 in the slot, which then locks the handle in position. As such, McKenzie teaches a handle arrangement that requires pins to be mounted directly on to the printed circuit board and handle ends, which lock the handle in position. Indeed, the McKenzie reference teaches away from the claimed invention in that the handle in McKenzie is made to lock into position. In addition, modifying the handle in McKenzie to include the missing claimed elements would render McKenzie improper for its intended purpose, namely to lock the handle in position. Consequently, even a combination of Davies in view of Craker and in further view of McKenzie fails to teach, advise, or suggest the claimed invention as recited in claims 12 and 21.

Furthermore, Applicant submits that the cited art of record contains no teaching, suggestion, or motivation to combine the references as proposed by the Office. See ACS Hosp. Systems, Inc. at 1577 (teachings of the prior art can be combined to show obviousness only if there is some suggestion or teaching to do so). Accordingly, the Office is picking and choosing the various missing claimed elements in an attempt to recreate the claimed invention with Applicant's disclosure as the basis. Thus, without using impermissible hindsight reasoning, it would not have been obvious to one of ordinary skill in the art at the time of the invention to

modify Davies in view of Craker and in further view of McKenzie to include the missing claimed elements. Regardless, Davies in view of Craker and in further view of McKenzie fails to teach, advise, or suggest the missing claimed elements. Therefore, claims 12 and 21 are patentable over Davies in view of Craker and in further view of McKenzie.

## CONCLUSION

The Applicant respectfully submits that the present application is in condition for allowance because all claims patentably distinguish the prior art of record. Reconsideration of the application is thus requested. Applicant invites the Examiner to telephone the undersigned if he or she has any questions whatsoever regarding this Response or the present application in general.

Dated this 6th day of March, 2001.

Respectfully submitted,

By: S. Shahpar

Shahpar Shahpar
Reg. No. 45,875

**SNELL & WILMER** L.L.P.
400 E. Van Buren
One Arizona Center
Phoenix, Arizona 85004-2202
Phone: 602-382-6306
Fax: 602-382-6070